Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of	)	
	)	
VIRTUAL GEOSATELLITE, LLC	)	RM-9650
	)	
Petition for Rule Making to Make Available C-Band Spectrum for Non-Geostationary Fixed-Satellite Service Gateway Operations	)	

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COMMENTS AND CONDITIONAL OPPOSITION OF PANAMSAT

PanAmSat Corporation ("PanAmSat") hereby comments upon, and conditionally opposes, the above-captioned petition (the "Petition") of Virtual Geosatellite, LLC ("Virtual Geo") to make the C-band available for use by non-geostationary ("NGSO") fixed-satellite service ("FSS") systems.

As Virtual Geo acknowledges in its Petition, the Commission's rules do not allow NGSO FSS systems to operate in the C-band FSS frequencies. Virtual Geo asks that the Commission amend its rules to permit such operation. It is unclear, however, whether the rule changes sought in the Petition would be limited to virtual geostationary orbit ("Quasi-GSO") satellite systems,[1] or whether they also would apply to traditional NGSO systems. Although it is PanAmSat's understanding that the system Virtual Geo intends to operate will be a Quasi-GSO system, the Petition appears to seek relief more broadly for all NGSO systems.

Based on PanAmSat's preliminary analysis, it appears that acceptable sharing criteria can be established that would permit the operation of Quasi-GSO satellite systems using the C-band. By contrast, the operation of traditional NGSO systems in the C-band would raise countless, and probably intractable, sharing problems.

As Virtual Geo notes in its Petition, the Commission already is considering a rule change that would allow NGSO FSS systems to share the Ku-band with GSO systems. That proposal has proven to be highly controversial and has enmeshed the

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[1] For these purposes, PanAmSat is referring to "Quasi-GSO" systems as those that operate in a highly elliptical (Molniya-type) orbit that is widely separated from the equatorial orbit, and that have been optimized to allow the satellites in the system to appear virtually motionless to a specific earth location for a long period of time.

Commission in a host of international and inter-industry disputes. Proposals to open the C-band to NGSO systems would be even more problematic and, for a variety of reasons, the Commission cannot simply extrapolate any rules adopted to permit NGSO sharing of the Ku-band into the C-band context.

For example, interference is cumulative, and there is more to cumulate at C-band than at Ku-band. The conventional Ku-band downlink frequencies (11.7-12.2 GHz) are not shared with terrestrial microwave. Conventional C-band frequencies (3.7-4.2 GHz), on the other hand, are shared with terrestrial microwave, making them subject to interference from three sources in the proposal made in the Petition — adjacent satellites, terrestrial microwaves, and NGSO systems. To the extent that it applies to traditional NGSO systems, therefore, the proposal in the Petition to apply Ku-band sharing rules to the C-band does not adequately take into account the additional interference to which GSO FSS Ku-band transmissions already are subject.

There are other technical concerns with NGSO/GSO sharing, moreover, that the Petition does not address. For example, the proposals for traditional NGSO systems to share spectrum with GSO systems at Ku-band are premised in part on the use of rain margin in that band. There is little rain attenuation at C-band, however, and consequently C-band links do not include an allowance for rain margin. Without rain margin, the risk that traditional NGSO systems will interfere with GSO systems increases significantly.

In addition, C-band main beams tend to be wider than Ku-band main beams. Although this distinction means that C-band antennas have greater main beam gain, it also increases the chances of interference from traditional NGSO systems, and makes it likely than interference will last longer, than would be the case at Ku-band.

In sum, sharing between NGSO and GSO systems is problematic at best and implicates serious interference issues. The Commission and the satellite industry have devoted substantial resources to addressing these issues in international fora, in rulemakings, and in other proceedings before the Commission. Despite years of effort, differences between the NGSO and GSO systems remain, and difficult choices lie ahead. This is no time to be initiating a new proceeding that raises sharing issues

that are even more extensive than those the Commission already is considering in the context of its Ku-band and Ka-band proceedings.

Accordingly, to the extent that Virtual Geo seeks access to FSS C-band frequencies only for Quasi-GSO systems as defined above, PanAmSat does not oppose the Petition. However, if the rule changes sought by Virtual Geo would apply to all NGSO systems, the Commission should deny the Petition.

Respectfully submitted,

PANAMSAT CORPORATION

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CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Comments and Conditional Opposition of PanAmSat Corporation was sent by first-class mail, postage prepaid, this 12th day of July, 1999, to each of the following:

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